LOCAL COLOUR AND NETWORKED SPECIFICITY

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Local Colour deals with the interplay of specificity and generality – the relationship between the local and material, and the abstracted and systematised domain characteristic of the digital. This paper applies these concepts to digital fabrication, and describes an approach to fabrication that emphasises the specificity of its materials.

Local Colour (detail), 2011, Mitchell Whitelaw, cardboard, dimensions variable.

Local Colour uses generative software and fabrication processes to reflect on digital materiality. This paper briefly outlines a way of viewing the digital / material relationship through the binary of generality and specificity, and applies this view to fabrication. Like other digital systems, fabrication often treats matter as an abstraction, a neutral substrate: Local Colour experiments with an alternative approach that embraces the specificity of the material.

We can describe the world of networked computing – a world where we all spend ever more time – as an infrastructure of generality. It deploys a system that is standardised, formally defined, highly structured, and internally consistent. If I send you an email, I do it trusting that the interlinked systems of hard- and software, the data protocols, the network switches and servers will hold together so that the email you receive is the same as the one I sent. We could say that the network 'generalises' between our two locations.

As I draft my email it exists as a material pattern of voltages and magnetic flux inside my computer. To transmit that pattern effectively, the digital network must correct or resist any local errors or inconsistencies that it might encounter along the way, so that they do not matter. This process applies to all computation and digital media. As Matthew Kirschenbaum writes, "computers ... are material machines dedicated to propagating a behavioral illusion, or call it a working model, of immateriality." [1]

Generality is another term for this "working model"; it is that tendency of computation to function across substrates, to make matter not matter. We can find it at multiple levels: locations on a memory chip, pixels in a display, nodes on a network; in each case the elements are physically distinct but functionally equivalent. Yet computers are material machines, so at every point, the digital is embodied: it occupies a substrate – whether light in optic fiber, magnetic charge on a disk, or holes in a punched card. That substrate is specific: this, here and now. Thus specificity is the twin of generality: in this 'transmaterial' view of digital media, the digital is always and everywhere material, even if it pretends otherwise.

The past few years has seen a wave of digital fabrication work sweep through digital art and design. [2] Fabrication as both process and practice offers a fascinating case study in digital materiality; in particular it is often framed through a distinction between the digital and the material. In an article boosting the revolutionary potential of digital fabrication, Chris Anderson declares that "atoms are the new bits." [3] Generator X 2.0, a 2007 workshop on fabrication in art and design organised by Marius Watz, carried the subtitle "Beyond the Screen." [4]

Anderson's catchphrase suggests a neat opposition between the digital and the material, bits and atoms. In this view, fabrication is a way to make the immaterial material. This is a false dichotomy, however, because the digital was never immaterial. Fabrication is not a process of materialising the virtual (it was already material); instead it opens up new specificities and substrates.

Rather than an ontological leap from bits to atoms, fabrication shifts the cultural needle on a continuum between generality and specificity. In the everyday functionality of digital culture, the specificity of the material is suppressed or suspended; in the recent wave of digital fabrication in art and design, the material comes forward. Yet fabrication as a process depends entirely on the functional generality of everyday computing. The relative emphasis of specificity and generality may shift, but the two terms always occur together.

Local Colour uses fabrication itself to explore these ideas; it is particularly informed by the way fabrication typically deals with matter. Its materials are almost always uniform and homogeneous: sheets of ply, acrylic or cardboard; feedstocks of resin or powder. In an echo of digital generality, they are standardised, interchangeable substrates. In the software that drives a digital fabricator such as a laser cutter, these materials are represented only as a set of attributes such as dimensions and density. So fabrication applies the functional logic of the digital to its materials: it deals with them as abstractions. As such fabrication often enacts a culturally distinctive attitude to matter, in which it is passive and inert, a blank 'stuff' to be shaped by human will.

The Local Colour bowls test out an alternative approach. Here the materials are physically distinctive rather than interchangeable – each bowl is cut from a single box, with its own dimensions, folds, holes, gaps and printed graphics. Fabrication here is a process of negotiation with the materials, as well as a way of thinking about the relationships between matter, specificity and the digital.

At times, material specificity 'reaches back' into the digital process. This tangles the simple causality that fabrication often implies, where matter is a passive thing to be formed. In this project the material feeds back to cause the digital form even as the digital form ultimately shapes the material. For example the dimensions of the bowls are constrained by the source boxes (as well as the laser cutter). The number of slices – and so the height of the bowl – is also constrained by the material available; again this reaches back to inform the algorithm generating the cutting instructions.

At the same time, the digital logic of generality can readily embrace the specificity of the material. For example, a key challenge here was fitting the cut pattern around the folds and holes of a particular piece of material. A logical solution was to measure and roughly model the sheets in a drawing program, then lay out the slices accordingly. The specifics of that sheet of cardboard become digital features: the digital domain encodes some of its attributes, in a way that can adapt to its idiosyncracies. This digital ability to 'fit' the specific is illustrated powerfully in practices such as projection mapping, where the screen – a classic architecture of generality – is adapted to a specific site. [5] Again digital generality is turned towards accommodating and intensifying the material and specific, rather than ignoring or abstracting it.

'Networked specificity' names the way that the functional generalisations of the digital can turn towards specificity; it is an attempt to hold together the generalising demands of the network with the local distinctiveness of its nodes. In one sense this is simply an account of networked culture as it really is; for each node is, after all, already local and distinct. But more interesting perhaps (especially for the arts) is what the network does. As Kirschenbaum says, the computer acts as if it is immaterial; the network acts as if its nodes are equivalent; fabrication processes often treat matter as a crude abstraction. This need not be the case, as this project begins to show. Rather than simply materialising the immaterial, fabrication can be better understood as an instance of 'transmaterial' digital culture; in which the digital is always material, and its abstractions serve to intensify, rather than dilute, our being-in-the-world.

References and Notes:

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